

MINISTRY OF COMMERCE AND INDUSTRY, EGYPT

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FOUAD I INSTITUTE OF HYDROBIOLOGY  
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NOTES AND MEMOIRS No. 38

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# THE FISHERY GROUNDS NEAR ALEXANDRIA

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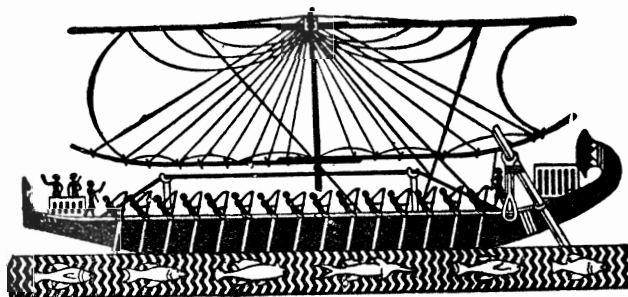
XX.—NEMERTINI

( with One Figure )

BY

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## The Fishery Grounds near Alexandria

The collection contained 9 tubes with Nemerteans. The study of the material is rather unsatisfactory as only one species could be identified with certainty. All other specimens were incomplete, the head part being absent. This circumstance enables us only to identify the order to which the specimen belongs. In the first place, parts of some larger Heteronemerteans were represented, collected at the Stations 2, 4, 36, 61, 115 and 122. The specimen from Station 36 is characterized by a very thick horizontal longitudinal muscle layer between the rhynchocoelomic and gastric cavities. The animal has a red colour.

Palaeonemerteans and monostilifer Hoplonemertea are absent, but the Polystilifera are represented by two individuals. Of one specimen only the middle and the hind region of the body were collected (Station 3, Caulerpa-Halimedes grounds), which fact prevented a serious study. The animal seems to be rather small and thin. The rhynchocoelomic diverticula are short, strait and unbranched. The dorso-ventral musculature is distinguished by the central muscle strands building a nearly complete cylinder at the outside of the rhynchocoelomic cavity and the intestine; the cylinder is ventrally incomplete, but dorsally it builds part of the rhynchocoelomic musculature. Only one species of the whole collection therefore could be studied more exactly; it has been recognized as a new genus of the Polystilifera.

*Wijnhoffella alexandrinensis* n. gen. n. sp.

Some characters of which a particular study has been made prevented from identification with one of the hitherto known genera in consequence I created a new genus, that I call after the well-known specialist on Nemerteans, Mrs. *Stiasny-Wijnhoff*, in Leiden. Judging after the greater part of its characters, the genus belongs to the Aequifurcata, though it possesses branched, very large rhynchocoelomic diverticula. I am unable to decide to which family it belongs, as relations exist both to the DREPANOPHORIDÆ and to the DREPANOBANDIDÆ.

The incomplete worm represented is from Station 61. mud, 50 fathoms (30, 10, 1933). Its length is about  $2\frac{1}{2}$  cm., the colour is yellowish without special markings. The greatest breadth is 3 mm.

The integument has been preserved badly. It was, however, possible to recognize the presence of sense organs without epithelial gland cells at several parts of the snout; their exact distribution could not be investigated, as the integument failed in some parts. The basement membrane has the usual structure, may be very thin. The outer circular muscle layer shows the same development throughout the body. Dorsally, a diagonal muscle layer has developed, that has about the same thickness as the circular musculature. Though the transverse sections show no flattening, the longitudinal musculature has been developed into very thick dorsal and ventral plates and is much thinner at the margins. The dorso-ventral musculature is rather stout. The principal bundles lie centrally at the sides of the proboscidian cavity and the intestine; they converge very much ventro-medially, but never complete a circle. In the gastric region they may constitute part of the lateral rhynchocoelomic wall, in any case they are so close to this wall, that they functionally belong to it—The proboscis being everted, the organs of the precerebral region have been dislocated so much, that a description of the present features cannot give an idea of the natural conditions.

The proximal proboscidian region has the structure described as typical by *Stiasny-Wijnhoff*, 1936. The longitudinal musculature has developed very well and includes 26 longitudinal nerves. The longitudinal muscle layer also builds the greater part of the wall in the distal region. The epithelium is highly folded without thickening of the basement membrane. As far as transverse sections allow us to conclude, the structure of the stylet-region seems to conform to the usual type. The rhynchodaeum opens at the tip of the snout and is separated from the mouth. Its structure is not clear. The wall of the rhynchocoelomic cavity has the usual interlacing, circular and longitudinal fibres, that are already developed in the cerebral region. The rhynchocoelomic diverticula start at a certain distance from the brains; the first pairs are small; in the region of the gastric cavity and the intestine, they become much larger. In the neighbourhood of the proboscidian cavity, the canals are narrow. They have several thin-walled distended parts, that are connected by narrow canals and extend peripherally to the margins. At the side of the intestinal coecum, they reach this organ ventrally. The construction of the diverticula is not at all uniform. Those of the gastric region are branched; the principal branch, that peripherally lies in contact with the muscular sheath of the body wall and reaches the

ventral side of the body, gives off a dorsal branch, which extends centrally and lies between the side nerve and the gastric cavity. The branching fails in the intestinal region. Moreover, in the gastric region smaller secondary branches are present, that extend especially more dorsally into the musculature of the body wall. Therefore, the rhynchocoelomic diverticula do not conform to one type. The diverticula also differ from each other as the thin-walled distensions may be in different states of contraction.

As stated before, the mouth is separated from the proboscispore, though it lies rather proximal. It is the beginning of a long oesophagus of the usual structure, that opens into the gastric cavity behind the brains and has no special differentiations. The stomach, however, possesses a number of longitudinal folds and tube-like blind-sacs; it stretches forward above the oesophageal mouth, forming a blind gut. By flattening of the epithelial folds the gastric cavity becomes the pyloric tube, which has the usual structure. The enteric blind gut reaches very far forward, even to the opening of the oesophagus into the stomach. In transverse sections, that still show the oesophageal epithelium in the ventral wall of the gastric cavity, sections of the enteric blind gut are present. The diverticula of the true intestine have a complicated structure. In the region of the pyloric tube, and just behind this part, dorsally branched diverticula are found with 2-3 short branches; next come more simply constructed dorsal diverticula lying on ventral ones with wide large secondary sacs. As to the intestinal musculature, the longitudinal muscle fibres of the oesophagus pass on to the stomach to form a continuous coat. The more distal part of the gastric cavity and the pylorus have two longitudinal muscle bundles on the dorso-lateral walls, which extend more distally near the intestine and may be observed along the dorso-lateral edges of the axial intestinal tube. *Stiasny-Wijnhoff* states emphatically that a musculature of the intestine is unknown to her.

The structure of the blood vascular system may be seen in the schematic text (Fig 1). It consists of a cephalic loop between the longitudinal vessels, that in the snout lie peripherally near to the muscular coat of the body wall till the hind third of the brain region. Here they bend inward and continue forward along the outer side of the brain to its front border. At the beginning of the ganglia they again turn inward to build the cerebral anastomosis inside the cerebral nerve-ring. The lateral blood-vessels and the dorsal vessel originate from the cerebral anastomosis. The lateral vessels are found ventro-medially to the cerebral organs and move outward behind them to continue at the side of the lateral nerves. In the

nephridial region they form a number of spirals. Metamerical anastomosis are present; they consist of rather contorted tubes and open into the dorsal vessel alternately. They are less in number than the rhynchocoelomic diverticula: f.e.i. found in the intestinal region on one slide with sections at each side, 2 rhynchocoelomic diverticula, 3 intestinal pouches, and 5 ventral secondary nerves, but only one vascular anastomosis. Even where the dorsal vessel lies outside the rhynchocoelomic cavity, both systems stand in some relation to each other as cellular strings of the wall of the blood-vessels enter at short distances into the musculature of the proboscidian sheath. The course of the dorsal vessel in the rhynchocoelomic cavity is a very short one as it leaves this organ already at the proximal end of the forwardly directed gastric blind gut, that is, before the oesophagus opens into the stomach. This disposition agrees best with the conditions described by *Stiasny-Wijnhoff* for *Drepanophorella sebæ* (1936. p. 142. Fig. 75 a). except for the lateral vessels, that form a special circle round the whole cerebral organ of that species. This loop fails in our specimen. Therefore, a nearer conformity seems to exist with *Punnettia willeyana* and *Drepanophorina lata*.

The nephridial organs extend from the cerebral organs to the transition of the stomach into the pylorus. They consist of highly wound tubes, that partly stand in near relation to the blood-vessels. The terminal organs could not be found because of the insufficient preservation of these organs, in particular.

The brain has not been studied more closely. The proximal part consists of the ventral commissure, the ventral ganglia are highly merged with the dorsal ones. The central fibrous masses of the proximal part of the brain lobes are much cleaved; in the middle part, behind the separation of the lateral nerves at the ventral side, they are completely fused; distally they are split into two parts, the ventro-medial one sending off the nerve to the cerebral organ and the dorso-lateral one being lightly split again. Externally the brain seems quite compact, especially the distal part. It seems noteworthy that the distal lateral branch of the fibrous mass gives off a number of very delicate nerves, that continue distally above the cerebral organs and that may be observed even behind them lying in the body parenchyma. Their exact behaviour more distally is unknown with the exception of the existence of one nerve on each side. This nerve lies, at first, next to the proboscidian sheath, more distally it is in direct contact with the dorsal part of the muscular body wall and at the end of the series of sections it was found between the bundles of its longitudinal coat. This nerve may be identical with the dorso-lateral nerve of *Stiasny-Wijnhoff*: the sections indicate

the innervation of the dorsal part of the body musculature by this nerve. Moreover, a medio-dorsal nerve has been observed in the distal part of the gastric region lying dorso-medially between the circular muscle layer of the body wall and the basement membrane, but its function is not yet clear.

The numerous eyes are arranged in four longitudinal rows: proximally they form clusters, distally they stand separately, one behind the other. The cerebral organs are placed behind the brain and are deeply embedded in the parenchyma. The state of their histological preservation was insufficient. A strong nerve supplies them, penetrating into the organ from the ventral side.

The gonads are not fully developed; the specimen seems to be a female. In the intestinal region the ovaries are arranged in pair. Each gonad forms a double sac, *i.e.* consists of two little sacs connected by a common pore. The gonopores are situated ventrolaterally.

Histological data about the Polystilifera are at present very scanty. This is probably due to the fact that most descriptions concern material from expeditions, where the means of fixation were not sufficient. A few histological observations made on this material will be published later.

Polystilifera reptantia of the Mediterranean are only known at present from Naples, Sicily and Banyuls (comp. *Stiasny-Wijnhoff*, 1926 and 1936); it concerns eight species, distributed to 5 genera. The present description extends our knowledge as regards the form, but the scanty material gave no opportunity to increase it as far as concerns ecology, biology or geographical distribution.

I thank Professor Dr. Steuer for confiding to me the material, which gave me the opportunity to study such an interesting specimen.

For literature see *Stiasny-Wijnhoff. G. The Nemertea Polystilifera of Naples. Public. Staz. Zool. Napoli. T. 7. 1926.*

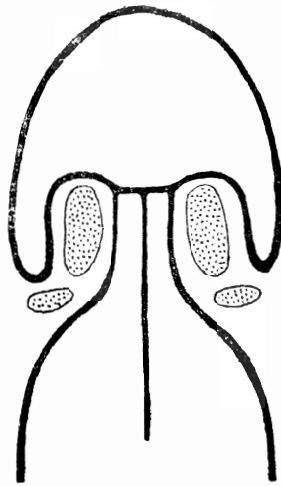


FIG. 1